

AMENDMENTS TO THE CLAIMS

Pursuant to 37 C.F.R. §1.121, the following is a complete listing of the claims of the present application. The following listing of claims will replace all prior versions of claims in the application:

Listing of Claims:

1.-66. (canceled)

67. (withdrawn, currently amended) An isolated filamentous polymer comprising polypeptide subunits coalesced into ordered aggregates, wherein each ~~at least one~~ of the polypeptide subunits comprises a SCHAG amino acid sequence as set forth in claim 124 or claim 127,

~~wherein the SCHAG amino acid sequence includes at least one substitution of an amino acid residue having a reactive amino acid side chain, and~~

wherein the reactive side chain of the substituted amino acid is exposed to the environment of the polymer ~~to permit subsequent attachment of a substituent~~ and has a moiety selected from the group consisting of an enzyme, a metal atom, an affinity binding molecule having a specific affinity binding partner, a carbohydrate, a fluorescent dye, a chromatic dye, an antibody, a growth factor, a cell adhesion molecule, a toxin, a detoxicant, a catalyst, a light-harvesting moiety, and a light altering moiety attached thereto.

68.- 100. (canceled)

101. (withdrawn, currently amended) A purified fiber comprised of an ordered aggregate of polypeptides that comprise a SCHAG amino acid sequence as set forth in claim 124 or claim 127, ~~wherein the SCHAG amino acid sequence includes at least one substitution of an amino acid residue having a reactive amino acid side chain, and~~ wherein the substituted amino acid is exposed to the environment in an ordered aggregate comprised of said polypeptides and has a moiety selected from the group consisting of an enzyme, a metal atom, an affinity binding molecule having a specific affinity binding partner, a carbohydrate, a fluorescent dye, a chromatic dye, an antibody, a growth factor, a hormone, a toxin, a detoxicant, a catalyst, a light-harvesting moiety, and a light altering moiety attached to its side chain, ~~wherein the SCHAG amino acid sequence comprises an amino acid sequence that is at least 70% identical to a member selected from the group consisting of SEQ ID NOs: 2, 4, and 50, and prion aggregation domain fragments thereof.~~

102. – 103. (canceled)

104. (withdrawn, currently amended) A purified fiber according to claim ~~101~~ 103, wherein the amino acid with the reactive amino acid side chain is selected from the group consisting of cysteine, ~~lysine, tyrosine, serine, glutamate, aspartate, asparagine, glutamine,~~ and arginine.

105. – 106. (canceled)

107. (withdrawn, currently amended) A purified fiber according to claim ~~101~~ 106, wherein the polypeptides further include an epitope tag.

108. (withdrawn, currently amended) A fiber according to claim ~~101~~ 106, wherein the polypeptides further include a polyhistidine tag.

109. (withdrawn, currently amended) A fiber according to claim ~~101~~ 106, wherein the polypeptides further include ~~a moiety~~a substituent attached to the reactive amino acid side chain, the ~~moiety~~ substituent selected from the group consisting of an enzyme, a metal atom, an affinity binding molecule having a specific affinity binding partner, a carbohydrate, a fluorescent dye, a chromatic dye, an antibody, a growth factor, a hormone, a cell adhesion molecule, a toxin, a detoxicant, a catalyst, a light-harvesting ~~moiety~~substituent, and a light altering ~~moiety~~substituent.

110. (withdrawn, currently amended) A fiber according to claim ~~109~~ 106, wherein the ~~moiety~~ substituent is a metal atom.

111.-116. (canceled)

117. (withdrawn, currently amended) A fiber according to claim 101, ~~wherein the SCHAG amino acid sequence comprises SEQ ID NO: 2, or prion aggregation domain fragments thereof,~~ with the proviso that amino acid 184 of SEQ ID NO: 2 has been substituted for by cysteine.

118. (withdrawn, currently amended) A fiber according to claim 101, ~~wherein the SCHAG amino acid sequence comprises SEQ ID NO: 2, or prion aggregation domain fragments thereof,~~ with the proviso that amino acid 2 of SEQ ID NO: 2 has been substituted for by an amino acid selected from the group consisting of cysteine, lysine, tyrosine, glutamate, aspartate, and arginine.

119.-123. (canceled)

124. (previously presented) A purified polypeptide comprising a SCHAG amino acid sequence that is at least 90% identical to amino acids 2 to 113 of SEQ ID NO: 2;

wherein the polypeptide self-coalesces into higher ordered aggregates,

wherein the SCHAG amino acid sequence comprises an amino acid with a reactable side chain selected from the group consisting of cysteine, lysine, glutamate, aspartate, and arginine substituted for the amino acid present at position 2 of SEQ ID NO: 2, and

wherein the reactable side chain is exposed to the environment in the polypeptide aggregates.

125. (currently amended) A polypeptide according to claim 124, wherein the SCHAG amino acid sequence comprises an amino acid with a reactable side chain selected from the group consisting of cysteine, lysine, glutamate, aspartate, and arginine substituted for the amino acid present at position 2 of SEQ ID NO: 2 and said amino acid substituted at position 2 of SEQ ID NO: 2 is the only ~~has exactly one amino acid with a reactive side chain present~~ occurrence of said amino acid in the SCHAG amino acid sequence.

126. (currently amended) A purified polypeptide according to claim 124, wherein the amino acid with a reactable side chain is a cysteine or a glutamate ~~residue~~.

127. (previously presented) A purified polypeptide comprising a SCHAG amino acid sequence that is at least 90% identical to amino acids 2 to 253 of SEQ ID NO: 2;

wherein the polypeptide self-coalesces into higher ordered aggregates,

wherein the SCHAG amino acid sequence comprises an amino acid with a reactable side chain selected from the group consisting of cysteine and arginine substituted for the amino acid present at position 184 of SEQ ID NO: 2; and

wherein the reactable side chain is exposed to the environment in the polypeptide aggregates.

128. (currently amended) A polypeptide according to claim 127, wherein the SCHAG amino acid sequence comprises an amino acid with a reactable side chain selected from the group consisting of cysteine and arginine substituted for the amino acid present at position 184 of SEQ ID NO: 2, and said amino acid substituted at position 184 of SEQ ID NO: 2 is the only ~~has exactly one amino acid with a reactive side chain~~ occurrence of said amino acid in the SCHAG amino acid sequence.

129. (currently amended) A purified polypeptide according to claim 127, wherein the amino acid with the reactable side chain is a cysteine-~~residue~~.

130. (canceled)

131. (canceled)

132. (previously presented) A polypeptide according to claim 124 comprising an amino acid sequence identical to amino acids 2 to 113 of SEQ ID NO: 2, except at the position in said amino acid sequence that corresponds to position 2 of SEQ ID NO: 2.

133. (previously presented) A polypeptide according to claim 127 comprising an amino acid sequence identical to amino acids 2 to 253 of SEQ ID NO: 2, except at the position in said amino acid sequence that corresponds to position 184 of SEQ ID NO: 2.

134. (previously presented) A polymer comprising polypeptide subunits coalesced into ordered aggregates, wherein at least one of the polypeptide subunits comprises a polypeptide according to claim 124 or 127.

135. (previously presented) A polymer comprising polypeptide subunits coalesced into ordered aggregates, wherein all of the polypeptide subunits comprise a polypeptide according to claim 124 or 127.

136. (canceled)

137. (previously presented) A polymer according to claim 134 that has a fiber morphology.

138. (previously presented) A polymer according to claim 137 attached to a solid support.

139. (previously presented) A polymer comprising polypeptide subunits coalesced into fibrous aggregates, wherein at least one of the polypeptide subunits comprises a polypeptide according to any one of claims 144-145.

140. (previously presented) A polymer according to claim 139, wherein the polymer is attached to a solid support.

141.-143. (canceled)

144. (currently amended) A purified polypeptide comprising the SCHAG amino acid sequence of SEQ ID NO: 2, with the proviso that amino acid 184 of SEQ ID NO: 2 has been substituted for by a cysteine or glutamate, or comprising a sequence at least 90%

identical to the SCHAG amino acid sequence of SEQ ID NO: 2 with the proviso that amino acid 184 of the sequence at least 90% identical to the SCHAG amino acid sequence of SEQ ID NO: 2 is a cysteine or glutamate, wherein the polypeptide sequence self-coalesces to form higher ordered aggregates.

145. (currently amended) A purified polypeptide comprising the SCHAG amino acid sequence of SEQ ID NO: 2, with the proviso that amino acid 2 of SEQ ID NO: 2 has been substituted for by an amino acid selected from the group consisting of cysteine, lysine, tyrosine, glutamate, aspartate, and arginine, or comprising a sequence at least 90% identical to the SCHAG amino acid sequence of SEQ ID NO: 2 with the proviso that amino acid 2 of the sequence at least 90% identical to the SCHAG amino acid sequence of SEQ ID NO: 2 is selected from the group consisting of cysteine, lysine, tyrosine, glutamate, aspartate, and arginine, wherein the sequence polypeptide self-coalesces to form higher ordered aggregates.

146. (withdrawn, currently amended) A purified fiber according to claim 101, wherein the SCHAG amino acid sequence comprises an amino acid sequence at least 95% identical to amino acids 2-113 or amino acids 2-253 of SEQ ID NO: 2~~a member selected from the group consisting of SEQ ID NOs: 2, 4, and 50 and prior aggregation domain fragments thereof.~~

147. (canceled)

148. (withdrawn, currently amended) A purified fiber comprised of an ordered aggregate of polypeptides that comprise a SCHAG amino acid sequence as set forth in claim 124 or claim 127,

~~wherein the SCHAG amino acid sequence includes at least one amino acid residue having a reactive amino acid side chain that is exposed to the environment in an ordered aggregate comprised of said polypeptides, and~~

wherein the polypeptides further include a moiety ~~a substituent~~ attached to the reactive amino acid side chain, wherein the moiety is ~~substituent~~ selected from the group consisting of an enzyme, a metal atom, an affinity binding molecule having a specific affinity binding partner, a carbohydrate, an antibody, a growth factor, a hormone, a cell adhesion molecule, a toxin, a detoxicant, and a catalyst.

149. (canceled)

150. (currently amended) A SCHAG polypeptide that comprises:

an amino acid sequence selected from the group consisting of:

(a) a SCHAG amino acid sequence that is at least 90% identical to amino acids 2-253 of SEQ ID NO: 2, wherein the SCHAG amino acid sequence comprises an amino acid with a reactable side chain selected from the group consisting of cysteine and arginine substituted for the amino acid present at position 184 of SEQ ID NO: 2; and

(b) a SCHAG amino acid sequence that is at least 90% identical to amino acids 2-113 of SEQ ID NO: 2, wherein the SCHAG amino acid sequence comprises an amino acid with a reactable side chain selected from the group consisting of cysteine, lysine, glutamate, aspartate, and arginine substituted for the amino acid present at position 2 of SEQ ID NO: 2;

(c) ~~amino acid sequences that are at least 90% identical to (a) or (b) and that self-coalesce into ordered aggregates; and~~

~~wherein there is a moiety at least one substituent~~ attached to a side chain of the SCHAG polypeptide, wherein the ~~moiety at least one substituent~~ is selected from the group consisting of an enzyme, a metal atom, an affinity binding molecule having a specific affinity binding partner, a carbohydrate, a fluorescent dye, a chromatic dye, an antibody, a growth factor, a hormone, a cell adhesion molecule, a toxin, a detoxicant, a catalyst, a light-harvesting ~~moiety~~~~substituent~~, and a light altering ~~moiety~~~~substituent~~, and wherein the side chain is one that is exposed to the environment when the SCHAG polypeptide self-coalesces to form an ordered aggregate.

151. (currently amended) A polypeptide according to claim 150, wherein the ~~moiety substituent~~ is selected from the group consisting of an enzyme, a metal atom, an affinity binding molecule having a specific affinity binding partner, an antibody, a cell adhesion molecule, a toxin, a detoxicant, and a catalyst.

152. (currently amended) A polypeptide according to claim 151, wherein ~~the substituent is attached to the side chain of an amino acid of the polypeptide, wherein the amino acid substituted at position 2 of SEQ ID NO:2 is selected from the group consisting of cysteine, lysine, tyrosine, glutamate, aspartate, and arginine.~~

153. (previously presented) A polypeptide according to claim 151, wherein the amino acid is cysteine.

154. (currently amended) A polypeptide according to claim 153, wherein the cysteine is substituted for the amino acid present at position 2- or 184 of SEQ ID NO: 2.

155. (previously presented) A polypeptide according to claim 150 that is attached to a solid support.

156. (withdrawn) A fiber comprised of:

SCHAG polypeptides as set forth in claim 150 coalesced into a fibrous ordered aggregate.

157. (currently amended) A polypeptide according to claim 155, wherein the moiety ~~the at least one substituent~~ is selected from the group consisting of an enzyme, a metal atom, an affinity binding molecule having a specific affinity binding partner, an antibody, a cell adhesion molecule, a toxin, a detoxicant, and a catalyst.

158. (currently amended) A polypeptide according to claim ~~150~~ 157, wherein the polypeptide comprises ~~comprising~~ at least two moieties attached to side chains of the polypeptide, wherein the moieties are different~~substituents~~.

159. (currently amended) A polypeptide according to claim 157, ~~wherein the at least one substituent is attached to the side chain of an amino acid of the SCHAG polypeptides~~, wherein the amino acid substituted at position 2 of SEQ ID NO:2 is selected from the group consisting of cysteine, ~~lysine, tyrosine, glutamate, aspartate,~~ and arginine.

160. (previously presented) A polypeptide according to claim 159, wherein the amino acid is cysteine.

161. (currently amended) A polypeptide according to claim 160, wherein the cysteine is substituted for the amino acid present at position 2- or 184 of SEQ ID NO: 2.

162. (withdrawn, currently amended) A ~~polypeptide~~ fiber according to claim 156 that is attached to a solid support.

163. (canceled)